

REMARKS/ARGUMENTS

Claims 29-56 are pending in this application. By this amendment, claims 31, 32 and 38-55 have been cancelled without prejudice and new claims 57-88 have been added. Support for these claims can be found in the original specification as filed. Claim 57 has been amended herewith. Reconsideration of the subject patent application and allowance of the claims are respectfully requested in view of the following remarks.

Objections

The abstract of the disclosure is objected to because the applicant does not set forth specifically that which is new in the art to which the invention pertains. The Examiner pointed out that "fuel" has been misspelled as "fule." Applicants submit that the abstract, as amended, complies with the rules and request that the objection to the abstract on this basis be withdrawn.

Claims 31 and 37 were objected to because of informalities. Specifically, claim 31 recites C_{19i} , which appears to be a typographical error. Claim 37 recites "the said fraction," wherein "the" and "said" provide the same function of antecedent basis to "fraction," therefore the use of both "the" and "said" is redundant and either "the" or "said" should be deleted.

New claim 58 recites " C_{19} " and should overcome the objection. The deletion of "the" from amended claim 37 should eliminate the redundancy objection.

Claim Rejections under 35 U.S.C. §112 and 35 U.S.C. §101

Claims 53-55 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Examiner argues that claims 53-55 provide for the use of an emulsified fuel, but do not set forth any steps involved in the method or process. Because the claimed recitation of a use does not set forth any steps involved in the process, the Examiner also rejected claims 53-55 under 35 U.S.C. §101.

Claims 53-55 have been cancelled herewith rendering the rejection to these claims moot. New claims 74-85 have been added to more clearly set forth steps involved in the method.

Applicants therefore request that the rejection on this basis be withdrawn.

Claims 31, 32, 38-46, 42, and 44-50 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, in the Examiner's opinion, claims 38-40, 42 and 44-46 improperly recite a Markush group. Claims 41, 43-46 and 49 recite "it" or "its" in the first line of each claim, and it is not clear to the Examiner which specific element or elements the applicant is referring to. Finally, claims 31, 32, 39, 42 and 47-50 recite broad recitation of range and narrower statements of ranges.

In response, claims 31, 32, and 38-50 have been cancelled rendering the rejection of these claims moot. New claims 57-58, 60 and 59-76 properly recite the Markush groups and clearly set forth that "it" or "its" refers to "said fuel." Also, no narrower statements of ranges appear in the new claims reciting broad ranges. Applicants therefore request that the rejection be withdrawn.

Claim Rejections under 35 U.S.C. §103

Claims 29-35, 39-42, 48 and 50-56 were rejected under 35 U.S.C. §103(a) as being unpatentable over EP1152049 to Intevap in view of Hayes et al. (U.S. Patent No. 4,666,457) and Shirodkar et al. (U.S. Patent No. 6,027,634). The Examiner argues that Intevap discloses an emulsion useful as a low emission fuel for compression ignition engines and a method for making the same. Furthermore, the Examiner concludes the emulsion includes a water phase, a hydrocarbon phase that is intrinsically liquid, and a surfactant, wherein said water phase is present in an amount greater than or equal to about 5% vol. with respect to the volume of the emulsion and the water phase and surfactant are present in ratio by volume of the water phase to the surfactant of at least about 1. The final emulsion contains a water content of at least 5% vol. and preferably between 5% vol. and about 15% vol. with respect to the total volume of the final emulsion product and the surfactant is present in an amount of less than or equal to 15% vol. respect to the emulsion. The Examiner also argues Intevap discloses a method for forming an

emulsion including providing a water phase, hydrocarbon phase, and the surfactant. Suitable hydrocarbons include petroleum hydrocarbons and natural gas derived products. Also, the Examiner states that Intevp discloses additional components, such as cosolvents and other additives, that may be present. The sulfur content of the hydrocarbons is less than 0.5% wt. and the surfactants include both lipophilic and hydrophilic surfactants.

The Examiner acknowledges the differences between Intevp and the presently claimed invention including: (i) the requirement that the emulsion include an emulsifying agent, and (ii) at least one hydrocarbon fraction includes at least 50% by weight of normal paraffins and the emulsifying agent includes at least one nonionic organic emulsifying agent. However, according to the Examiner, Shirodkar is drawn to an oil-water emulsion including asphaltene and an emulsifying agent, and discloses an emulsifying agent including a cationic, anionic, or nonionic surfactant, wherein emulsifying agents are alternatively referred to in the art as wetting agents, surface active agents and synthetic detergents. Therefore, the Examiner is of the opinion that it would have been obvious to one of ordinary skill in the art to use Shirodkar's emulsifying agent which encompasses surfactants generally in Intevp because an emulsion can be formed.

Furthermore, the Examiner argues Hayes is drawn to hydrocarbon emulsions and discloses an emulsion having viscous hydrocarbons characterized by a paraffin content of about 50% by weight. The Examiner is also of the opinion that Hayes also discloses nonionic surfactants including ethoxylated carboxylic esters including ethoxylated natural fats and oils and at least one nonionic surfactant is used. Therefore, the Examiner concludes it would have been obvious to one of ordinary skill in the art to use Hayes's hydrocarbon and surfactant package in Intevp because the resulting composition and method would allow the emulsion to be stored or transported easily along with providing the advantage of burning directly as quality combustible fuels.

In response, Applicants respectfully traverse the Examiner's argument in view of the new claims presented herewith. The Examiner fails to make a *prima facie* case of obviousness

because no evidence has been presented that a person of ordinary skill in the art would have been motivated to modify or combine Intevap with Shirodkar and Hayes to arrive at the claimed invention. It is insufficient that these references can be combined. The Examiner fails to show why one of ordinary skill in the art would have been motivated to combine the teachings of Intevap, Shirodkar and Hayes because the Examiner simply picks and chooses references to make up for the deficiencies of Intevap. Intevap describes a water-in-hydrocarbon emulsion where the hydrocarbons include hydrocarbons and natural gas derived products such as paraffins C₁₀-C₂₀. No more information is given with regard to the paraffins involved in the Intevap emulsion and nowhere is it described that the emulsions comprise a certain amount of normal paraffins. Nowhere is there a suggestion that n-paraffins could be an advantage in the emulsions. Without a motivation or a suggestion, the Examiner relies on improper hindsight. This is insufficient to sustain an obviousness rejection. There is no suggestion or motivation to combine Shirodkar's emulsifying agent and Hayes' hydrocarbon and surfactant package to Intevap's emulsion to arrive at the claimed invention because there is a requirement that the emulsion include an emulsifying agent and at least one hydrocarbon fraction must include at least 50% by weight of normal paraffins in the present invention. Therefore, the Examiner's obviousness rejection is improper and Applicants request that the rejections on this basis be withdrawn.

Claim 36 was rejected under 35 U.S.C. §103(a) as being unpatentable over Intevap in view of Hayes and Shirodkar as applied to claims 29-35, 39-42, 48, and 50-56 above, and further in view of Cosyns et al. (U.S. Patent No. 4,133,841). The Examiner acknowledges the difference between Intevap in view of Hayes and Shirodkar and the presently cited claims, which is the requirement that the normal paraffins comprise synthetic paraffins obtained by oligomerizing olefins having 2 to 5 carbons or by Fischer-Tropsch synthesis starting from light hydrocarbons. However, the Examiner argues Cosyns discloses the light fraction containing hydrocarbons having from 3 to 6 carbons is subjected to fractionation to recover paraffins. Therefore, the Examiner is of the opinion that it would have been obvious to one of ordinary skill in the art to

use Cosyns' paraffins in Intevap in view of Hayes and Shirodkar to obtain a fraction of high content in relatively light olefins and paraffins as set forth in the present invention.

Hayes describes the use of highly viscous hydrocarbons in hydrocarbons-in-water emulsions. The advantage of such emulsions is the low viscosity. The amount of paraffins is 50% (weight) but no information is given on the nature of the paraffins considered in the definition of "highly viscous hydrocarbons." The emulsions described are different from the emulsions according to the invention as they are inversed phase when compared to the invention. Also, nothing can be compared with regard to the surfactant as the goal of this reference is to prepare hydrocarbons-in-water emulsions. Moreover, nowhere is it suggested that n-paraffins could be convenient nor that water-in-hydrocarbon emulsions could be used.

Finally, Shirodkar describes asphaltene particles suspended in a residual petroleum oil in water emulsion. The system is a suspension in an emulsion which is far different from the emulsions of the invention. Once again, the Examiner has failed to present any evidence that would motivate a person of ordinary skill in the art to combine Intevap with Hayes and Shirodkar and Cosyns to arrive at what is claimed. Cosyns describes a process for upgrading effluents from Fisher Tropsch synthesis. No emulsions are described. Nowhere is there a suggestion to combine Cosyns' paraffins with Intevap in view of Hayes and Shirodkar to obtain a fraction of high content in relatively light olefins and paraffins as claimed because the presently cited claims require that the normal paraffins comprise synthetic paraffins obtained by oligomerizing olefins having 2 to 5 carbons rather than 3 to 6 carbons. Because of this lack of motivation, the obviousness rejection is inappropriate. Therefore, Applicants request that the rejection on this basis be withdrawn.

Claims 37, 38 and 43-47 were rejected under 35 U.S.C. §103(a) as being unpatentable over Intevap in view of Hayes and Shirodkar as applied to claims 29-35, 39-42, 48 and 50-56 above, and further in view of Haupais et al. (U.S. Patent No. 6,068,670). The Examiner acknowledges the difference between Intevap in view of Hayes and Shirodkar and the cited

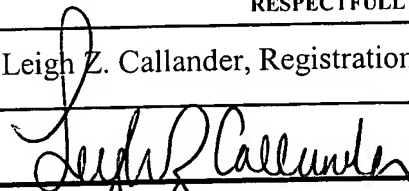
claims is the requirement that the hydrocarbon include a vegetable oil and that the emulsion includes an antifreeze, a soot remover, a cetane number improver, and a bactericide. The additives in Haupais are added in an amount of 0.01 to 5% by weight compared to the total weight of the hydrocarbons, water, and the emulsifying system intrinsically including the weight ratio of the normal paraffins and the cetane improver as presently claimed. Therefore, the Examiner argues it would have been obvious to one of ordinary skill in the art to add Haupais' additives into the emulsion of Intevap in view of Hayes and Shirodkar because Haupais' additives provide desirable properties to the emulsion thereby obtaining the presently claimed invention.

In response, Applicants respectfully traverse the Examiner's arguments in view of the new claims presented herewith. There is no motivation for one of ordinary skill in the art to combine Haupais' additives into the emulsion of Intevap in view of Hayes and Shirodkar to arrive at the claimed invention because the present cited claims require the hydrocarbon to include a vegetable oil and the emulsion include an antifreeze. Haupais relates to a fuel which is a water-in-hydrocarbon emulsion. In column 8, it can be envisaged to incorporate at least one esterified or non esterified vegetable or animal oil. Animal and vegetable oil, in the instant invention, are hydrotreated and furthermore the subject matter of depending claims, and not the true core of the invention. Applicants also underscore that no paraffins are mentioned in this reference and that there is no apparent reason to combine such a document with others. The fact that these references can be combined is insufficient to support an obviousness rejection. Applicants therefore request that the rejection on this basis be withdrawn.

Claim 49 was rejected under 35 U.S.C. §103(a) as being unpatentable over Intevap in view of Hayes and Shirodkar as applied to claims 29-35, 39-42, 48 and 50-56 above, and further in view of Coleman et al. (U.S. Patent No. 6,607,566). Claim 49 has been cancelled but the subject matter is set forth in new claim 72. The Examiner acknowledges the difference between

Intevep in view of Hayes and Shirodkar and the presently cited claims is the requirement that the aromatics content is less than 11% and preferably less than 6%. Coleman discloses a hydrocarbon content of about 43% to about 70%, wherein the hydrocarbon has a high paraffinic content and a low aromatic content of less than about 10% and preferably less than about 3%. Therefore, the Examiner argues it would have been obvious to use Coleman's high paraffuric content and low aromatic content hydrocarbon in the emulsion of Intevep in view of Hayes and Shirodkar because the kilowattage per gallon provided by combusting the fuel composition is sufficiently high so that the engine need not be derated. It also discloses an aqueous fuel emulsion comprising as little surfactant as possible. Compositions include hydrocarbon petroleum distillate which comprises high paraffinic low aromatic hydrocarbons, but nothing is said about the content or whether it is saturated or not and the fact that n-paraffins are present in the composition. Also, alcohol is present in the composition. New claim 72 is dependent upon claim 34 and the amount of aromatics in the composition is not the core of the invention. Simply choosing among thousands of references, one reference referring to low amount aromatics and combining such reference with several other references without motivation to do so does not suggest a rejection based on obviousness.

Applicants submit that the present application is now in condition for allowance.
Reconsideration and favorable action are earnestly requested.

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